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WORMIAN BONES IN ARTIFICIALLY DEFORMED KWAKIUTL CRANIA

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After a somewhat careful examination of the available medical literature, and especially of the standard textbooks of anatomy, such as Quain, Testut, and the chapter on the skull by Spee in the forthcoming anatomy of von Bardeleben, I fail to find any special mention or reference to any paper on the occurrence of wormian bones in the coronal suture, or in the sutures of crania which have been artificially deformed. It seems that the subject is well worthy of more extended investigation, and I believe that in the collection of Kwakiutl skulls under consideration we have proof, in the unusual frequency of wormian bones in the coronal suture, that artificial pressure on the head of the child has a tendency to lead to anomalous conditions in the suture which is most intimately effected. That artificial pressure exerts an influence on the degree of serration of sutures as well as a disturbance in the normal time of closure of such sutures can, it seems to me, be reasonably demonstrated by a study of Peruvian crania, where within close limits we find the two extreme types of artificial deformation.

The Kwakiutl skulls in the Field Columbian Museum number about 60. Of these 35 are of adults, with sutures open or partially so, and hence suitable for examination, and percentages to be made hereafter will be based on the latter number. These skulls have all been artificially deformed by bandages which encircled the head in the region of the coronal suture and passed backward and downward over asterion. All the skulls, more-

over, show to a greater or less extent the effect of pressure on the frontal bone.

The series may be roughly divided into two groups: those which show the force of the bandage in the form of a broad, deep groove at or just behind the coronal suture, and those which do not show a groove. In the first group I have recorded 9 cases and in the second one case of one or more wormian bones in the coronal suture, thus making 10 in all. I copy from my notes

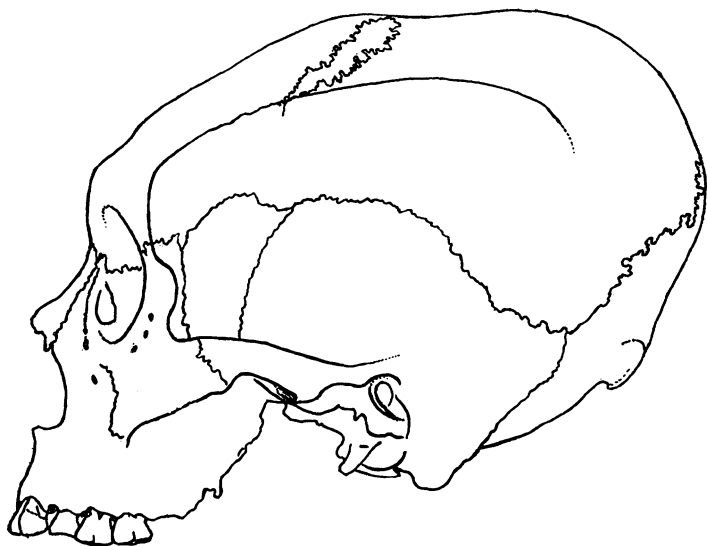


FIG. 1.

the essential points in regard to these 10 skulls, beginning with the single skull in the second group first.

No. 40521.¹—Skull of male; only moderately elongated; no trace of groove; coronal suture obliterated on each side below stephanion; epipteris bone at right and left pterion, and four wormian bones in left coronal suture just above stephanion.

No. 40696.—Skull of female; slightly elongated; coronal groove not present except at sides; coronal suture almost entirely effaced, but three small wormian bones in the left and two in the right coronal can just barely be seen.

¹ Of the Field Museum Catalogue.

No. 40568.—Skull of female; slightly elongated; coronal groove faintly indicated; large wormian bone in left coronal suture.

No. 40523.—Skull of female; sutures almost entirely obliterated; slight coronal groove; two medium-sized wormian bones in left and one in right coronal suture.

No. 40500.—Skull of female; moderately elongated; well developed coronal depression; large epipteric at left pterion; three small wormian bones in both right and left coronal suture.

No. 40693.—Skull of male; excessively elongated; deep, broad groove just posterior to coronal suture; three wormian bones in both right and left coronal suture, one measuring 7 x 20 mm.

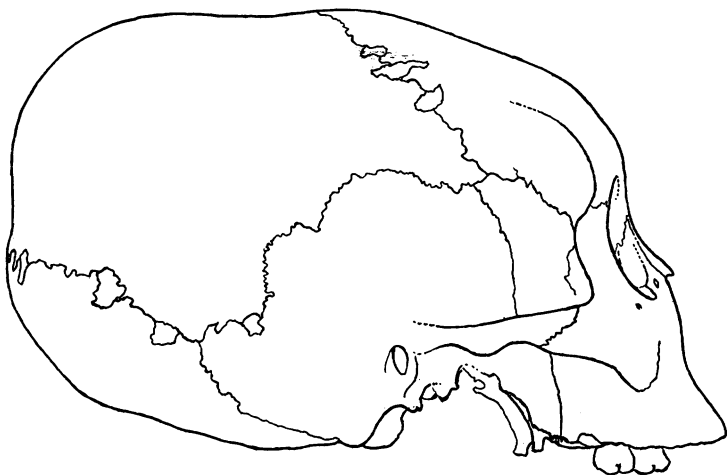


FIG. 2.

No. 40786.—Skull of female; greatly elongated; deep groove just behind coronal suture; sutures almost entirely obliterated; traces of one wormian bone in the right and three in the left coronal suture.

No. 40669.—Skull of male; excessively elongated; well defined, broad, deep groove just at and behind coronal suture; suture effaced below stephanion on both sides. In the left coronal suture there is an irregular, long, narrow wormian bone which measures 12 x 50 mm.; on the right side there are three wormian bones, one immediately after the other, and measuring together 40 x 10 mm. There is thus on each side almost a double coronal suture. (See figure 1.)

No. 40509.—Skull of young female; basilar synchondrosis partially open; much depressed about frontal region and very greatly elongated; broad groove behind coronal suture; three good-sized wormian bones in the right and two in the left coronal suture. (See figure 2.)



FIG. 3.

No. 40672.—Skull of male; frontal bone artificially flattened; excessively elongated—the most pronounced of the series; broad, deep groove just behind the coronal suture; five wormian bones in the right, three of which are of large size, and two in the left coronal suture, one of which measures 12 x 21 mm. (See figure 3.)

The frequency of occurrence for each sex and for the right and left side may be seen in the following table :

	<i>Males.</i>		<i>Females.</i>	
	Right.	Left.	Right.	Left.
Frequency of wormian bones in the coronal suture	3	4	5	6

It is thus seen that the percentage of frequency is slightly more in the females than in males, and on the left side than on the right. Both these conclusions are opposed to those reached by M. Chambellan,¹ who has made a special study of the frequency, etc., of wormian bones.

In regard to the percentage of frequency for the whole series and the causes which lead to its unusual size, one in three and five-tenths, I can only explain it by the presence of the evidences of bandaging in early life and by the fact that the percentage of frequency becomes the greater as we ascend the scale of length of the cranium due to artificial elongation, and just in direct proportion to a deep, well-defined groove behind the coronal suture. These causes, together with artificial pressure on the frontal bone, prevented a normal fronto-parietal development. To remedy this abnormal condition, wormian bones—"stop-gaps," as Humphry calls them—are developed in the coronal suture.

THE LAUGHLIN ISLANDERS have a number of interesting customs. They have a house set apart for the dead, and another house for the new-born. They keep up a great wailing for the dead, the corpse being kept in the dead-house for five or six days, the nearest relations watching the corpse. They smear themselves with what oozes from the dead body. Then the body is buried for a month, when it is taken up and the bones cleaned and packed in a bundle and buried in the forest. At childbirth the woman is moved into the house set apart for her, and she is made to drink large quantities of water. If the mother suffers great pain she kills the child, and the women around her show no sympathy for her or the child. The mother remains in this house eight days. Then a great fire is built around the house, which almost suffocates the mother and her offspring. The relations of the husband and the wife come and make presents, and a feast begins and lasts two days. The husband comes to this house; he and his wife are rubbed with cocoanut oil and decked with ornaments, and are thus presented to all gathered there if the child is the first born, as the eldest takes the father's place at his death.—*Australasian Anthropological Journal*.

¹ "Étude anatomique et anthropologique sur les os Wormiens," Thèse, Paris, 1883. My knowledge of this paper is second hand and from several sources. I regret that I have not seen it.